Star Exercise 4A

Purpose:
- Determine the settings of protective devices.
- Evaluate the coordination curves
- Run PD Sequence-of-Operation for various locations and evaluate the results.

Procedure

- Size Phase \ Ground CTs
- Given the protection determine the size \ setting of PDs for phase and ground protection.
- Use the standard \ recommended guidelines for determining the settings.

Low Voltage Motor Protection

LV_Mtr1
100 HP
0.46 kV
FLA: 110 A
LRC: 625.2%
1800 rpm
Hot Stall Time: 25 sec
Cold Stall Time: 30 sec
No Load Acceleration Time: 7 sec
Full Load Acceleration Time: 9 sec

PDs:
MCP: Cutler Hammer, HMCP-F
Overload Heater: Allen Bradley Bulletin520 Type J (Curve - Typical Class 20)

LV_Mtr2
30 HP
0.46 kV
FLA: 40 A
LRC: 600%
3600 rpm
Hot Stall Time: 18 sec
Cold Stall Time: 20 sec
No Load Acceleration Time: 3 sec
Full Load Acceleration Time: 5 sec

PDs:
Thermal Magnetic: Cutler Hammer, HFD
Overload Heater: General Electric, CR324

Medium Voltage Motor Protection

MV-Mtr1
500 HP
4 kV
FLA: 60.58
LRC: 650%
3600 rpm
Hot Stall Time: 18 sec
Cold Stall Time: 23 sec
No Load Acceleration Time: 6 sec
Full Load Acceleration Time: 8 sec

PDs:
Relay (Siemens, 7SJ600: 49, 50)
400 A Contactor/Starter

MV_Mtr2
1500 HP
4 kV
FLA: 185.5 A
LRC: 510%
1800 rpm
Hot \ Cold Stall Time: 18 \ 23 sec
NL \ FL Acceleration Time: 6 \ 8 sec

PDs:
R-rated fuse (Westinghouse CLS)
Motor Relay (GE, 469: 49, 50, 50G)
400 A Contactor/Starter

Transformer Protection

T1	**R11**	**ABB**	**CO**
T2	**Fuse4**	**S&C**	**SM-4**
T3	**Fuse2**	**ERMCO**	**9F54WLD**
T4	**Relay41**	**ABB**	**DPU-2000R**
T5	**Fuse1-1**	**S&C**	**SM-4**

Feeder Protection

Cable2	**R12**	**ABB**	**CO**
Cable3	**CB1-1**	**Cutler-Hammer (Carriere LVSST)**	**DS-420 (FB600E)**
Cable4	**Relay32** **Relay33** *(residual)*	**GE Multilin** **GE Multilin**	**IFC** **IAC-51N**
Syn1Fdr	**SR469**	**GE Multilin**	**469**

All Equipment Cables (refer to motor protection)

Generator Protection

Gen1
13.8 kV
4 MW
85% PF
4 Pole

PD: GE G60 Relay